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THE DRAGONFLY FAUNA OF PRESIDIO AND JEFF DAVIS COUNTIES OF THE BIG BEND REGION OF TRANS-PECOS, TEXAS.

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The Odonatan Fauna of the Big Bend Region of Trans-Pecos, Texas, although not an extensive one, is yet very interesting and practically unknown. For these reasons it seems worth while to record the observations and the specimens collected during the period from September, 1928, to July, 1930, and September, 1931, while the writer was stationed at the Pink Bollworm Laboratory at Presidio, Texas.

The entire area of the Big Bend Region composed of Presidio, Brewster and Jeff Davis Counties, is almost devoid of water courses and lakes are absent. Certain of the larger arroyos of this arid region have a few short stretches of water running throughout the year, the principal of these being Alamito, Terlingua and Limpia Creeks. Otherwise all the arroyos are bone dry the year around except immediately following storms when they roll their torrentuous waters to the Rio Grande. Spring holes are rarely encountered and most of the ponds to be found are located on the various ranches and are of man-made origin. Many of these are in the form of large circular concrete tanks, about six to eight feet deep and thirty to fifty feet in diameter. In the Rio Grande Valley an occasional oxbow pond is discovered of a permanent nature but on the whole, aside from the river, water is a scarce commodity.

Two faunal zones are represented in the region. The lower Sonoran occupies the Rio Grande Valley and the lower levels of the Chinati Mountains, which parallel the north-south direction of the Rio Grande, at about twenty-miles distance. This zone ranges in altitude from the level of the river, at 2700 feet, to about 5000 feet in the Chinati Mountains. The Upper Sonoran Faunal Zone comprises the area to the north of the Chinatis ranging from about 5000 feet to 6500 feet elevation. This Zone includes the broad Marfa Plains and the grassy valleys extending through the Davis Mountain region of Jeff Davis County, which adjoins Presidio County on the north. A third faunal zone, the Transitional, may be present above 6500 feet on the higher peaks of these mountains but so little is known about the insect fauna of these altitudes that no definite statement can be made regarding this Zone.

In the Big Bend region the principal stream is the Rio Grande, which at Presidio, a few miles below the confluence of the Rio Concho and the Rio Grande at Ojinaga, is a fair-sized river, but not nearly as large as most people imagine. Above the junction, the Rio Grande is a small stream seldom more than forty to seventy feet across, except at flood times when it often overflows and floods the lower levels of the valley. The Cibolo Arroyo, draining the

eastern end of the Chinati Mountains, has a short permanent stretch of running water about half a mile in length at the mining town of Shafter, but the greater part of this is ruined by cyanide pollution from the Shafter Silver Mines. Almost every mountain range has a stream or two that runs intermittently for short stretches to shortly disappear in the desert. There is one such in the Bofecillos Sierras about 25 miles northeast of Presidio. In the Davis Mountains, the principal stream is Limpia Creek in the Lower Limpia Canyon, a few miles north of Fort Davis. In 1929 this was a nice stream but in 1931 during the exceptionally dry summer and fall, which is the rainy season in the region, this watercourse as far as I know was bone dry. However, there may have been some deep pools that did not dry up completely, but I saw no indication of water while following down the canyon. The effects of this drought on the Odonatan fauna in this region of the Davis Mountains are not known, but they must have been drastic. The main watercourse is Alamito Creek, which arises on the southern base of the Davis range, and runs south through Marfa to join the Rio Grande six miles below Presidio. There are long stretches, often miles in length, of this broad gravelly arroyo in which a small stream of water runs the year around. Besides these there are a number of irrigation ditches of medium and small size in the Rio Grande Valley and a number of the permanent ones support an odonatan fauna.

The torrentuous arroyos that sweep everything clean in their path, after the storms, possibly do more to prevent the establishment of an odonatan and aquatic insect fauna in this region than any other single factor. An especially severe storm possibly affects the aquatic insect fauna established in streams as a fire does a forest, but the aquatic insect fauna due to its nature, possibly within a few years, builds up to its former status. However fierce, storms are local and droughts do not affect all parts of the same region equally, so that permanent breeding grounds exist which prevent the complete extirpation of the fauna.

Dragonflies are great wanderers and many species are taken miles from any water far out on the desert or high up in the desert mountains, such as the Chinatis. The Anisoptera are the dominant features of the Odonatan fauna of the Big Bend region; the Zygoptera being few in number are more or less confined to the margins of streams, irrigation ditches, spring holes and ponds. However, the Zygopteran species are poorly represented in this paper and a number of species exist which are not here reported.

Lower Sonoran Odonate Fauna Lenitic Environment.

In a small pond near Presidio *Aeschna multicolor* and *Anax junius* were breeding abundantly in the fall of 1928, but this temporary pond had dried up by August 1929. *Orthemis ferruginea* is the most abundant species to be found in the valley and *Libellula suturata* is next in importance, followed by *Anax junius*, and these dragonflies rapidly collect over any new surface of water such as an irrigated cotton field. Around several ox-bow ponds, about three miles east of Presidio, *Pachydiplax longipennis* was a common species along with several others of lesser abundance, such as: *Erythrodiplax* sp. probably con-

nata, *Libellula suturata*, and *Orthemis ferruginea*. *Brechmorhaga mendax* was an uncommon species and a single specimen of *Plathemis lydia* was seen. This specimen was sailing back and forth over the surface of the water out in the center of the pond and although the writer waded out into the shoulder deep water, despite every effort, the specimen could not be captured.

Lotic Environment.

Erpetogomphus compositus is the commonest species met with and is found wandering far out over the desert miles from any water. I took one pair mating on a creosote bush out on the desert, about sundown. *Erpetogomphus designatus* and *Gomphus intricatus* are two species rarely captured in the valley. The latter species was taken along the banks of the Rio Grande. At Candaleria, some 55 miles up-river from Presidio, a single specimen of *Plathemis subornata* was captured in a cotton field. It possibly bred in the Rio Grande which is a small stream in this region. This species, associated with *Libellula composita* Hagen, was found commonly around spring holes such as Ferguson's Spring and Boone Springs, on the road between Wendover and Ely, on the desert of northeastern Nevada, on July 25, 1931. Daintily flitting up and down the willow fringed banks of the Rio Grande, where the sunlight fell resplendently on their iridescent bodies, and alighting on the pendant limbs of willows drooping near the water's surface, *Hetaerina americana* proved to be a common species at Candaleria. This species was also found breeding at Adobe's Rancho about 22 miles up the river from Presidio.

The Cibola creek at Shafter supported *Progomphus obscurus* as the commonest species. At Wilson's Ranch 25 miles southeast of Marfa, a number of gomphoid naiads were found burrowing in the sand of the Alamito Creek bed and leaving long meandering trails behind them. These were probably *P. obscurus*, but there were no adults in the air at this time in late May, and it is nearly impossible to transport naiads any distance safely, due to the high temperatures, to be later reared through to the adults. A few water holes in the Cibola arroyo bed above Shafter, in 1929, had a number of naiads which were reared through successfully and proved to be *Libellula suturata*. Gomphoid naiads, possibly *P. obscurus*, were also found but not reared through. In late September, 1931, at a high elevation in the Chinatis, a single pruinosed specimen of *Plathemis lydia* was netted.

The Limpia Canyon Creek on October 4, 1929, yielded on a short collecting trip, *Erpetogomphus compositus* as a common species, which was found flying up and down the stream bed, where it rippled over the stones. *Erpetogomphus lampropeltis* at this location was an uncommon species. At another spot in the stream where the stream was wider and deep pools occurred between the stretches of rapidly running water, the very large damselfly *Archilestes grandis* was seen and captured. It was an exceedingly wary creature and was only captured after persistently pursuing it as it darted from rock to rock out in the center of the stream. *Hetaerina americana* was an abundant species along this stream. I have a specimen of *Tramea carolina* taken in this canyon by the Gottholt Brothers of Marfa, but without any datum. *Lestes unguiculatus* was found in a stream bed, at about 7500 feet elevation on the Cox's Ranch, at the

south base of Mt. Livermore, Davis Range, in late September, 1931, and is the only species possibly representing the Transitional Faunal Zone.

Argia violacea was abundant along a small stream on the Wilson Ranch, at the west base of Mt. Emory, Chisos Mountains, in the southern portion of Brewster County. Large Zygopteran nymphs in the stream, presumably this common species, were blackish with black caudal gills.

I am very much indebted to Mr. Donald J. Borror of Ohio State University for the identification of these species.

Below is a summarized list of the Odonatan species of the Big Bend Region arranged according to faunal zone and environment. Although the list is by no means complete, especially for the Davis Mountain region, the writer believes practically all the forms of the Rio Grande Valley are represented, except for the Zygoptera, which are poorly collected for the entire region. All the specimens were collected by the writer with the exception of *Tramca carolina* and *Aeschna dugesii*.

Lower Sonoran Fauna.

LENITIC SPECIES.

Aeschna multicolor Hagen. Presidio, Texas, 1 ♂, 30.VI,30; 1 ♂, 10.VIII,29, a common species.

Anax junius Drury. Presidio, Texas, 2 ♂, 16.VIII,29, fairly common.

Erythrodiplax sp. probably *connata* Burm. Presidio, Texas, 2 ♂, 23.VIII,29, few.

This species is not listed in Needham and Heywood: "A Handbook of the Dragonflies of North America." Mr. Donald J. Borror who is studying this genus informs me that this may represent a new species.

Orthemis ferruginea Fab. Presidio, Texas, 1 ♂, 1 ♀, 30.VI,30, very abundant.

Libellula suturata Uhler. This is a common species in the Rio Grande Valley.

Plathemis lydia Drury. Presidio, Texas, 23.VIII,29, 1 specimen seen of this rare species.

Pachydiplax longipennis Burm. Presidio, Texas, 4 ♂, 23.VIII,29, common.

Brechmorhoga mendax Hagen. Presidio, Texas, 1 ♂, 23.VIII,29, uncommon.

Lotic Species.

Progomphus obscurus Rambur. Shafter, Presidio Co., Texas, 1 ♂, 9.IX,29, few. Giant Sahuara Desert, 10 miles east of Gila Bend, Arizona, 1 ♀, 28.VIII,31, very rare and miles from any water.

Erpetogomphus designatus Hagen. Presidio, Texas, 1 ♂, 28.VIII,29, very rare.

Erpetogomphus compositus Hagen. Presidio, Texas, 2 ♀, 28.VIII,29; 1 ♀, 9.IX,28, an abundant species in the valley.

Gomphus (Stylurus) intricatus (Hagen). Presidio, Texas, 1 ♂, 8.VI,30, uncommon. This species has been taken once before in southwestern Texas in 1 ♂, 2 ♀, Rio Grande River, Brewster Co., Texas, Mitchell and Bushman, and

reported by Kennedy, 1917. Notes on the Life History and Ecology of the Dragonflies (Odonata) of Central California and Nevada, p. 554. Proceedings of the United States National Museum, No. 2192.

Libellula suturata Uhler. Chinati Mts., near Shafter, Texas, 1 ♂, 9.IX.29, uncommon.

Plathemis lydia Drury. Chinati Mts., Presidio Co., Texas, 1 ♂, 27.IX.31, elev. 5000 feet, very rare.

Plathemis subornata Hagen. Candalaria, Presidio Co., Texas, 1 ♀, 16.X.28, very rare.

Hetaerina americana Fab. Candalaria, Presidio Co., Texas, 16.X.28, common along the river banks. Adobes Rancho, 22 miles up river from Presidio, Presidio County, Texas, Oct., 1928, common along irrigation ditches.

Upper Sonoran Fauna.

Lotic Species.

Ereptogomphus lampropeltis Kennedy. Lower Limpia Canyon Creek, Davis Mts., Jeff Davis Co., Texas, 1 ♂, 5.X.29, few. According to Needham and Heywood, this species is known only from California. Kennedy described this species in the Canadian Entomologist, 1918, Vol. 50, p. 297, from a male taken at Sespe Creek, Fillmore, Ventura Co., California, Aug. 7, 1915. Apparently this is the first record east of California; without doubt the first Texas record.

Ereptogomphus compositus Hagen. Lower Limpia Canyon Creek, Davis Mts., Jeff Davis Co., Texas, 1 ♂, 5.X.29, uncommon.

Aeschna dugesi Calvert. Davis Mts., Limpia Canyon, Granger's Ranch, Jeff Davis Co., Texas, 9 ♂, 1 ♀, July 5, 1930; 4 ♂, 1 ♀, June 25, 1931. L. K. Gloyd. Leonora K. Gloyd records this species in Ent. News, Vol. 43, No. 7, p. 189, as the first specimens of the species taken in the United States. It is a rare species and known only from Mexico; Guanajuato in Mexico and Los Parres in Baja California, in addition to the Texas record.

Tramea carolina Linn. Limpia Canyon, Davis Mts., Jeff Davis Co., Texas, 2 specimens taken by the Gottholt Bros., Marfa, Texas. The locality would be better suited to the wider ranging *Tramea lacerata* Hagen, for *T. carolina* is a southeastern species and this record far west of any previous known record. However, I am recording this species as identified.

Hetaerina americana Fab. Lower Limpia Canyon Creek, Davis Mts., Jeff Davis Co., Texas, 1 ♀, 5.X.29, common.

Archilestes grandis Rambur. Lower Limpia Canyon Creek, Davis Mts., Jeff Davis Co., Texas, 1 ♂, 5.X.29, a single specimen of this unusual species seen and captured (tip of abdomen missing).

Needham and Heywood on page 269 of their "Handbook" give only Washington and California for the distribution of this species. However, H. Garman in Ent. News, Vol. 43, No. 4, describes an *Archilestes* species taken in Kentucky that is provisionally placed as this species. In his paper he refers to a pair of *A. grandis* taken in Oklahoma and states it is also known from Texas as well as from Washington to Lower California. His Kentucky specimens were taken along a mountain stream that contained a number of large pools at the base of waterfalls and which retained their water although the stream dried up

in the dry season. Mountainous streams with pools between stretches of rapidly running water in semi-arid environments seem to be the typical habitat for this species. If his Kentucky species represents *Archilestes grandis* then this species has an extensive yet locally restricted distribution. Possibly the eastern specimens represent a different species.

Lestes unguiculatus Hagen Cox's Ranch, south base of Mt. Livermore, Davis Mts., Jeff Davis Co., Texas, 3 ♀, 27, IX, 31, small stream bed at about 7500 feet altitude, few.

This is probably the only species that represents the Transitional Fauna.

Argia violacea Hagen. Wilson Ranch, west base of Mt. Emory, Chicos Mts., Brewster Co., Texas, 2 ♂, 3 ♀, 17, VII, 30, small running stream at about 5000 feet altitude, common. Nymphs apparently of this species were also common in the small pools of water.

Odonata are wide ranging species and do not indicate faunal regions as definitely as other insect orders such as the Orthoptera, possibly because the naiads live in a common liquid medium, that aside from its movement, is ordinarily affected by a single factor, temperature. In studying the list, small as it is, we note a general mix-up of species from various faunal sections of the continent, with only a slight preponderance of southwestern species.

Of the species listed, *Progomphus obscurus*, *Anax junius*, *Platheimis lydia*, *Pachydiplax longipennis* and *Hetaerina americana* belong to a group generally distributed over the United States. Southern species include *Erpetogomphus designatus* and *Orthemis ferruginea*, while *Tramea carolina* is southeastern and *Lestes unguiculatus* is northern in range. *Erpetogomphus compositus* and *Aeschna multicolor* represent a group widely ranging in the west and the remainder belong to the southwest which in this region forms the most interesting and characteristic composition of the fauna. Typical southwestern species are: *Gomphus (Stylurus) intricatus*, *Libellula suturata*, *Platheimis subornata*, *Brechmorhoga mendax* and *Archilestes grandis*, while *Erpetogomphus lampropeltis* here recorded for the first time for Texas, falls in this group. *Aeschna dugesi* and *Erythrodiplax connata*?, new to the fauna of the United States, are Mexican species.

The most striking feature of the Odonatan fauna of the Big Bend Region is the presence of the genus *Erpetogomphus*. Three of the four known American species occur in the region and as is usual in the Southwest, the Gomphoid species are well represented. In the case of Odonata (and also Orthoptera) there is a Mexican Sonoran Fauna that includes the southern tip of the Big Bend Region and appears to be found no place else east of Arizona.

NOTES ON APHODIUS IN THE CADAVERINUS GROUP WITH A DESCRIPTION OF A NEW SPECIES. (COLEOPTERA, SCARABAEIDAE.)

BY HOWARD E. HINTON,
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This paper is a result of the study of the *Aphodius* in the *A. cadaverinus* (Mann.) group in the collection of the writer. In determining a goodly number of specimens of this interesting group, one new species has come to light.

Aphodius rugoclypeus Hinton, n. sp.

Aphodius cadaverinus Saylor, Pan-Pacific Ent. Vol. IX, No. 4, p. 188, 1933.

Oblong, robust, convex; black or piceous, shining; antennae and tarsi much paler.

Head without tubercles, moderately convex, with a few very coarse punctures at base on each side of middle, elsewhere finely, moderately densely punctate, anteriorly and at sides densely rugose; clypeus broadly, feebly emarginate at middle and obtusely rounded on each side of the emargination, sides feebly arcuate, very slightly sinuate at end of clypeal suture; genae obtuse, prominent.

Pronotum three-fourths as long as wide; sides arcuate, widest at middle, converging to base; base narrower than apex, arcuate, hardly perceptibly sinuate before hind angles, margined; hind angles very broadly rounded; disk extremely coarsely, moderately densely, very irregularly punctate and finely, moderately sparsely punctate throughout.

Elytra at base narrower than prothorax, wider posteriorly, sides arcuate, humeri dentiform; disk finely striate, striae crenately punctate with evenly spaced, moderately fine punctures; intervals on disk flat, finely, moderately sparsely punctate; scutellum coarsely punctate at extreme base, impunctate apically. Wings reduced.

Mesosternum coarsely, densely punctate, minutely alutaceous, moderately shining, obtusely carinate; metasternum with a fine, longitudinally impressed line, finely and sparsely punctate; ventral segments minutely alutaceous, finely, moderately densely punctate at middle, densely and somewhat rugulose punctate at sides. Anterior face of front tibiae smooth, with a few punctures on inner margin near base, outer margin crenate, first tarsal segment as long as second; apex of hind tibiae fimbriate with short, subequal spinules, first tarsal segment as long as the longer spur and nearly as long as the combined length of the three following segments. Length, 7 mm.; breadth, 3.5 mm.

The type (No. 3853 Mus. Calif. Acad. Sci.) and five paratypes were collected by E. J. Blum in the St. Cruz Mts., California, on February 19, 1933. Two additional paratypes were collected by E. J. Blum in Moroga Valley, California, on January 4, 1934. One additional paratype was collected by L. W. Saylor at Ben Lomond, Santa Cruz County, California, on March 15, 1933.

In the broadly rounded sides of the clypeal emargination and in the extremely coarse prothoracic punctation this species resembles *A. cadaverinus* (Mann.), but differs in having the head densely rugulose anteriorly instead of smooth and the spinules of the apex of the hind tibiae subequal instead of distinctly unequal. From *A. gentilis* Horn, *A. rugoclypeus* may be separated by its much coarser prothoracic punctation and broadly rounded instead of dentate sides of the clypeal emargination.

It seems very likely that the paratypes labelled Moroga Valley are mislabeled and were collected, instead, at Santa Cruz.

Aphodius cadaverinus (Mann.)

Oxyomus cadaverinus Mann., Bull. Nat. Hist. Soc. Moscow XVI, p. 261. (1843).

In 1928 Dr. E. C. Van Dyke recorded (Pan-Pacific Ent. V. IV, No. 4, p. 154-155) the rediscovery of the long lost *A. cadaverinus* on a specimen collected by himself at Clear Lake, Lake Co., California, in May, 1895.

After a careful re-examination of all the evidence available, the writer is of the opinion that *A. gentilis* Horn may just as well be *A. cadaverinus* (Mann.), but since nothing can be said with certainty until the type is examined by a competent person, he believes the species now placed as *A. cadaverinus* (Mann.) should stand as such until proved not to be by comparison with the type. Since the type is probably lost, the species will probably always stand as *A. cadaverinus* (Mann.)

A short series of this species was collected at Moroga Valley, California, by E. J. Blum on January 4, 1934. The spinules of the apex of the hind tibiae are distinctly unequal and not equal as stated by Dr. Van Dyke (1928) in his key to the species of this group. The broadly rounded sides of the clypeal emargination, the non-rugose head, the extremely coarse prothoracic punctation, and the unequal spinules on the apex of the hind tibiae will serve to separate this species from all allied species.

***Aphodius martini* Van Dyke.**

Aphodius martini Van Dyke, Pan-Pacific Ent. Vol. IV, No. 4, p. 153, 1928.

In the collection of the writer there are four specimens of this species. Three specimens bear the locality "Cal."; and the fourth was collected by the writer at Riverton, El Dorado Co., California, in August, 1930.

Three of the above specimens came to the writer determined as *A. cribratulus* Schm. From *A. cribratulus* Schm. it differs in having the sides of the clypeal emargination dentate instead of broadly rounded and the anterior portion of the head rugose instead of smooth. It is most closely related to *A. gentilis* Horn, and in both species the head and clypeus are much the same. It may be distinguished from *A. gentilis* by its smaller size and distinctly finer prothoracic punctation.

A CONTRIBUTION TO THE INSECT FAUNA OF TIMAGAMI

BY A. W. A. BROWN,

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(Continued from Page 211.)

ODONATA.

From the collections of Dr. E. M. Walker, made in 1908 and 1923, of Mr. W. E. Ricker, made in 1931, and my own. Identified by Dr. E. M. Walker.

ZYGOPTERA AGRIONIDAE.

1. *Calopteryx aquabilis* Say. Aug. 4, '23. K-K-K.L. (W).
2. *Calopteryx maculata* Beauv. Aug. 3, 4, '23. K-K-K.L. (W). Aug. 6, 10. S.C. (B).
3. *Lestes congenere* Hagen. Sept. 12, '08. O.C. (W). Aug. 12 I.B.C. (R).
4. *Lestes disjunctus* Selys. Sept. 11, '08. O.C. (W). Aug. 11. I.B.C. (R). July 24, 25. W.L. (B).
5. *Lestes forcipatus* Ramb. Aug. 4, '23. K-K-K.L. (W).
6. *Argia moesta putrida* (Hagen) L.T. (W). Aug. 24. G.L.T. (R).
7. *Argia violacea* (Hagen) Aug. 4, '23. K-K-K.B. (W). Aug. 6. S.C. (B).
8. *Enallagma boreale* Selys. June 11. G.L.P. (B).
9. *Enallagma ebrium* (Hagen) July 24. W.L. (B).

10. *Enallagma hageni* (Walsh) Sept. 11, '08 O.C. Aug. 4, 5. K-K-K.L. '23 (W). Aug. 10, 24. L.T. (R). Aug. 10 S.C. (B).
11. *Nehalennia irene* Hagen. July 24. W.L. (B).
12. *Ischnura verticalis* Say. Near O.L. (W).

ANISOPTERA AESCHNIDAE.

13. *Hagenius brevistylus* Selys. Aug. 10, '23. L.T. (W).
14. *Lanthus albistylus* Selys. Aug. 10. S.C. (B).
15. *Stylurus scudderi* (Selys.) Sept. 9, '08. W.C. (W).
16. *Gomphus spicatus* Hagen. L.T. (W).
17. *Boyeria grafiana* Willn. Aug. 4-8, '23. L.T. (W). Aug. 9. C.C. Aug. 17. G.L.P. Aug. 24. Swarming L.T.; and S.W.A. Sept. 7. Wilson L. (R).
18. *Boyeria vinosa* (Say). Aug. 10, '23. Creeks about L.T. (W). Aug. 22, E.C. (R).
19. *Aeschna canadensis* Wlk. Sept. 11, '08. O.C. (W.) Aug. 11, 12. I.B.C. Aug. 20. O.B. (R). July 25. W.L. (B).
20. *Aeschna eremita* Scudd. Sept. 11, '08. O.C. Aug. 4, '23. K-K-K.L. (W). Sept. 17. W.L. Sept. 20. O.B. (R).
21. *Aeschna interrupta* Wlk. Sept. 11, '08. O.C. (W). Aug. 17. W.L. (R). Sept. 16. I.B.C. (B).
22. *Aeschna subarctica* Will. Sept. 11, '08. O.C. (W).
23. *Aeschna umbrosa* Wlk. Sept. 11, '08. O.C. (W). Aug. 13. I.B.C. Aug. 14. D.B. Sept. 7, T.R.L. (R). Sept. 16. I.B.C. (B).

LIBELLULIDAE.

24. *Didymops transversa* (Say). L.T. (W).
25. *Helocordulia uhleri* (Selys). June 10. B.I. Tower trail (B).
26. *Tetragoneuria cynosura simulans* (Mutt.) Timagami (A.D. Robertson).
27. *Williamsonia fletcheri* Will. Will. June 11. G.L.P. (B).
28. *Cordulia shurtleffi* Scudd. June 11. G.L.P. (B).
29. *Somatochlora elongata* Scudd. Aug. 10, '23. N.A. (W). Aug. 12. I.B.C. Aug. 14. D.B. Aug. 17. W.L. Aug. 20, O.B. (R).
30. *Somatochlora tenebrosa* Say. Aug. 24. G.L.T. (R).
31. *Somatochlora williamsoni* Wlk. Aug. 5, '23. K-K-K.L. Aug. 15 to Sept. 11. Obabika, Cross and Timagami L's. (W). Aug. 7, 14, D.B. Aug. 22. O.B. (R).
32. *Somatochlora walshii* (Scudd.) Aug. 5, '23. K-K-K.L. (W). Aug. 11, 12 I.B.C. (R).
33. *Somatochlora kennedyi* Wlk. Aug. 5, '23. K-K-K.L. (W).
34. *Somatochlora forcipata* (Scudd.) Aug. 17. G.L.P. (R).
35. *Somatochlora cingulata* (Selys). Aug. 10. I. 776. Aug. 12, I.B. (R).
36. *Libellula exusta julia* Uhl. June 11. G.L.P. Aug. 24, 25. W.L. (B).
37. *Libellula quadrimaculata* L. L.T. (W).
38. *Sympetrum costiferum* (Hagen). Sept. 11, '08. O.C. (W). Aug. 13. I.B.C. Aug. 19. I. 893. Aug. 20. O.B. (R).
39. *Sympetrum obtusum* (Hagen). Sept. 4, '08. C.L.T. (W). Aug. 12. I.B.C. Aug. 19. D.B. (R). July 24, 25. W.L. Aug. 6. S.C. (B).

40. *Sympetrum semicinctum* (Say). Sept. 4, '08. C.L.T. Sept. 11, '08. O.C. (W). Aug. 11, I.B.C. (R).
41. *Sympetrum vicinum* (Hagen). Aug. 19. I. 893. Aug. 21, O.B. Sept. 7, T.R.L. (R).
42. *Sympetrum danae* (Sulzer). Sept. 11, '08. O.C. (W). Aug. 12. I.B.C. (R).
43. *Leucorrhinia frigida* Hagen. July 25. W.L. (B).
44. *Leucorrhinia glacialis* Hagen. July 24 and 25. W.L. (B).
45. *Leucorrhinia hudsonica* Selys. June 11, G.L.P. July 25. W.L. (B).
46. *Leucorrhinia intacta* (Hagen). Aug. 11, L.T. (R).
47. *Leucorrhinia proxima* Calv. Aug. 11, 12. I.B.C. (R). July 25, W.L. (B).

Abbreviations:—C. C., Cochrane's Camp (Camp Timagami). C.L.T., Portage Cross to Timagami Lake (no longer existent). T.R.L., Tomiko River Lake, on Ferguson Highway. K-K-K.L., Ko-Ko-Ko Lake. N.A., North Arm. O.B., Outlet Bay. O.C., Obabika Creek. O.L., Obabika Lake. S.W.A., Southwest Arm. W.C., Wakimika Creek. For others, see locality descriptions.

PLECOPTERA.

Identified by Nathan Banks, and A. N. Caudell, Washington.

NEMOURIDAE.

1. *Leuctra* sp. ♂ "Agrees well with description of *L. bradleyi* Claassen. . . may be undescribed form." (Caudell). Aug. 10. S.C.

CORRODENTIA.

Identified by Nathan Banks.

CAECILIIDAE.

1. *Caecilius aurantiacus* Hag. Sept. 15. I. 315. On underbrush near shore (5.00 p. m.).

MESOPSOCIDAE.

2. *Elipsocus canadensis* Prov. Sept. 15. I. 315. In deep underbrush.

HEMIPTERA.

Identified by G. S. Walley, Entomological Branch, Ottawa, and (marked*) by H. G. Barber, Bureau of Entomology, Washington.

SCUTELLERIDAE.

1. *Homaemus aeneifrons* Say. July 27, Aug. '5, 15 and 23. B.I. around Ballfield. Aug. 21 and 22. I. 340. Sweeping.

PENTATOMIDAE. PENTATOMINAE.

2. *Euschistus tristigmus* Say. June 3. B.I. Flying on to Hazel in young Birch woods. June 5. Around laboratory. Sept. 10. Ballfield, on rock.
3. *Cosmopepla bimaculata* Thom. June 3. B.I. Common in pasture and young hardwood. June 10. B.I. Tower trail. Aug. 23. B.I. On outside of laboratory.
4. *Banasa dimidiata* Say. Sept. 3. T.I. Red Pine woods, on Mountain Maple.

ASOPINAE.

5. *Podisus serieventris* Uhl. June 5. Surface of L.T.
6. *Podisus modestus* Dall. June 4. Surface of L.T. June 6. E.B.I. Sucking larva on Mountain Maple. Aug. 6. B.I. Inside laboratory. Sept. 4, B.I. From caterpillar webs on Poplar leaves.

COREIDAE.

7. *Alydus conspersus* Mont. Aug. 23. B. I. Around laboratory.

8. *Corizus crassicornis* L. June 3. B.I. On grass in open pasture. Aug. *21 and 22. I. 340. Sweeping.

9. *Corizus bohemannii* Sign. June 6. E.B.I.

BERYTIDAE.

10. **Neides muticus* Say. Aug. 23. B.I. On Solidago. S.W. end of Ball-field.

LYGAEIDAE. CYMINAE.

11. *Ischnorhynchus resedae* Panz. Aug. 28. B.I. On White Birch in Ball-field. Sept. 1. S.P. Sweeping Carex and Chamaedaphne in swamp.

OXYCARENINAE.

12. *Crophius disconotus* Say. Aug. 21. B.I. Inside screen of laboratory.

RHYPAROCHROMINAE.

13. *Ligyrocoris diffusus* Uhl. Aug. 5. B.I. Sweeping in Ball-field.

14. *Peritrechus saskatchewanensis* Barb. June 5. B.I. In Choke Cherry blossom.

15. *Eremocoris ferus* Say. June 4 and 5. Surface of L.T.

16. *Scolopostethus thomsoni* Reut. Sept. 18. I. 315. In humus under needle litter.

TINGITIDAE.

17. **Corythucha hewitti* Drake. Aug. 7, 15, and 21. B.I. On Hazel—under-surface of leaf. Also inside laboratory.

REDUVIIDAE.

18. *Sinea diadema* Fab. Aug. 4. K-K-K.B. Rocky Point. Aug. 1 and 23. B.I. Around Ball-field. *Sept. 1. S.P. Sweeping Carex and Chamaedaphne in B. Spruce swamp.

NABIDAE.

19. *Nabis ferus* L. Aug. 5. B.I. Open sunny places on Ball-field trail.

20. *Nabis rufusculus* Reut. June 3. B.I. On grass in open pasture. June 4. P.B.

21. **Nabis roseipennis* Reut. June 4. P.B.

ANTHOCORIDAE.

22. *Triphleps insidiosus* Say. Aug. 23. B.I. Around laboratory.

MIRIDAE. PHYLINAE.

23. *Plagiognathus obscurus* var. *fraternus* Uhl. Aug. 1, 5, and 21. B.I. On flowers, and sweeping, in Ball-field.

24. *Plagiognathus* sp. Aug. 1. B.I. On flowers near Ball-field.

MIRINAE.

25. *Trigonotylus ruficornis* Geoff. Aug. 5. B.I. Sweeping in Ball-field.

26. *Stenodema vicinum* Prov. June 3, Aug. 5 and 15. B.I. On grass around Ball-field. Aug. 21 and 22. I. 340. Sweeping.

27. *Stenodema trispinosum* Reut. June 5. B.I. On grass in open pasture.

CAPSINAE.

28. *Capsus ater* L. July 28. B.I. In grass near laboratory.

29. *Lygus pratensis* L. Aug. 5 and 15. B.I. Around Ball-field. Aug. 21. I. 340. Aug. 23. B.I. Around Laboratory. Sept. 4.

30. *Lygus pratensis rubidus* Knegt. June 3, 5, and 9; July 22 and 23. B.I. In grass around laboratory, in Ball-field and young woods behind it.

31. *Adelphocoris rapidus* Say. July 28. B.I. In flower. Aug. 21. I. 340.
 32. *Neurocolpus nubilus* Say. July 22. B.I. Ball-field trail.

GERRIDAE.

33. *Gerris dissortis* D. & Harris. July 25. Forma rosea Bay.
 34. *Gerris comatus* D. & Hottes. July 25. Forma rosea Bay. Aug. 2. L.B.
 SALDIDAE.
 35. *Pentacora ligata* Say. Aug. 4. K-K-K.B. Rocky Point.

HOMOPTERA.

Identified by G. S. Walley, Entomological Branch, Ottawa, and (marked*) by P. W. Oman, Bureau of Entomology, Washington.

CERCOPIDAE.

1. *Aphrophora quadrinotata* Say. Aug. 1 and 15, B.I. On flowers and underbrush around Ball-field.
2. *Aphrophora saratogensis* Fitch. Sept. 14. Portage Peninsula.
3. *Philaenus leucophthalmus* L. Aug. 5 and 15. B.I. On flowers and underbrush around Ball-field.
4. *Philaenus lineatus* L. July 22; Aug. 5 and 15 B.I. On flowers and underbrush around Ball-field. Aug. 21 and 22. I. 340. Sweeping.
5. **Clastoptera obtusa* var. *borealis* Ball. Aug. 21. I. 340.

MEMBRACIDAE.

6. *Ceresa basalis* Wlk. Aug. 5, 15, 23 and 28. B.I. Around Ball-field and laboratory. One on White Birch leaves.

CICADELLIDAE. BYTHOSCOPIINAE.

7. *Agallia novella* Say. June 3. B.I. On grass in open pasture.
8. *Agallia quadripunctata* Prov. June 3. B.I. On grass in open pasture.
9. *Agallia sanguinolenta* Prov. Aug. 15. B.I. Sweeping Hazel and Pteris around Ball-field. Aug. 22. I. 340. Sweeping. Sept. 1. S.P. On gravel beach.
10. **Idiocerus* sp. Aug. 22. I. 340. Sweeping.

CICADELLINAE.

11. *Oncometopia lateralis* Fab. June 4. Surface of L.T. June 5. B.I. In Choke Cherry blooms. Sept. 1. S. P. Black Spruce Swamp.
12. *Helochara communis* Fitch. June 3. B.I. On grass in open pasture. Sept. 14. Lily Bay. Among shore weeds of shallow bay.
13. *Graphocephala coccinea* Forst. Aug. 10. S.C. On *Osmunda regalis*. Aug. 22. I. 340. Sweeping. Aug. 23. B.I. Near laboratory.
14. **Draeculacephala angulifera* Wlk. June 3, and Aug. 5. B.I. In grass around Ball-field. July 24. W.L. Muskeg shore.

GYPONINAE.

15. *Gypona octolineata* Say. Sept. 1. S.P. Black Spruce swamp.

JASSINAE.

16. *Acucephalus nervosus* Schrank. Aug. 21 and 22. I. 340. Sweeping.
17. *Platymetopius acutus* Say. Sept. 1. S.P. Sweeping *Carex* and *Chamaedaphne* in B. spruce swamp.
18. *Deltocephalus misellus* Ball. Aug. 5. B.I. Sweeping in Ball-field.
19. *Thamnotettix subcupraeus* Prov. Sept. 1. S.P. Sweeping *Carex* and *Chamaedaphne* in B. Spruce swamp.

20. *Thamnotettix clitellarius* Say. Aug. 21. B.I. Attracted to light in laboratory—11 p. m.
21. *Thamnotettix belli* Uhl. June 10. E.B.I. trail.
22. *Thamnotettix decipiens* Prov. Sept. 1. S.P. Sweeping Carex and Chamaedaphne in B. Spruce swamp.
23. *Chlorotettix unicolor* Fitch. Aug. 22. I. 340. Sweeping.

TYPHLOCYBINAЕ.

24. *Empoasca atrolabes* Gill. Aug. 23. B.I. Near laboratory.

FULGORIDAE.

25. **Pissonotus* sp. Aug. 23. B.I. Near laboratory.

APHIDIDAE.

Determined by P. W. Mason, Bureau of Entomology, Washington.

26. *Eucraphis betulae* (Koch).
27. *Macrosiphum rosae* (L.).

COLEOPTERA.

Identified by L. J. Milne, Museum of Comparative Zoology, Harvard, Massachusetts.

CICINDELIDAE.

1. *Cicindela duodecimguttata* Dej. June 6. E.B.I. Sandy shore of bay facing South.
2. *Cicindela tranquebarica* Hbst. Sept. 10. B.I. On sand in Ball-field.

CARABIDAE. CARABINAE.

3. **Sphaeroderus nitidicollis* Chev. (? var. *brevoorti* Lec.). Sept. 20. I. 315. On mouse, dead 6 days.
4. **Notiophilus semistriatus* Say. Sept. 17. Along shore north of G.L.P. In humus, under needles and above rock.

HARPALINAE.

5. **Tachys nana* Gyll. Aug. 9. B.I. Under Red Pine bark, from woodpile.
6. *Poecilus lucublandus* Say. June 4. Surface of L.T.
7. *Dysidius mutus* Say. June 4 and 5. Surface of L.T. June 9. B.I. Under bark of felled White Pine. Sept. 18, 19, 20 and 22. I. 315. In humus litter, on mouse dead 6 days, and on peanut butter (trap).
8. *Calathus gregarius* Dej. Sept. 19. I. 315. On peanut butter (trap).
9. *Platynus sinuatus* Dej. June 4 and 5. Surface of L.T. —6. E.B.I. Under wooden box on sandy shore.
10. **Europhilus retractus* Lec. June 4. Surface of L.T.
11. **Lebia ornata* Say. Aug. 29. High ridge north of G.L.P.
12. *Harpalus viridiaeneus* Beauv. June 4. Surface of L.T.

*—Identified by L. L. Buchanan, Washington.

GYRINIDAE.

13. **Dineutes horni* Rbts. Aug. 2. Loon Bay.
14. *Gyrinus minutus* Fab. July 24. B.I. In pail of water. Aug. 2. L.B.
15. *Gyrinus affinis* Aube. Aug. 2. L.B. —10. S.C. Among reeds.

*Identified by L. L. Buchanan, Washington.

HYDROPHILIDAE.

16. *Sphaeridium scarabaeoides* L. Aug. 24. B.I. Cow-manure in Ball-field.

SILPHIDAE.

17. *Necrophorus tomentosus* Web. Sept. 20 and 23. I. 315. In mouse, dead about 6 days.
18. *Choleva clavicornis* Lec. Sept. 19 and 20. I. 315. In mouse, dead about 4 days.

STAPHYLINIDAE. OXYTELINAE.

19. **Arpedium brachypterum* Grav. July 26. B.I. On Spiraea behind laboratory.
20. **Platystethus americanus* Er. Aug. 24. B.I. Cow-manure in Ball-field.

STENINAE.

21. *Stenus* sp. Sept. 1. S.P. On fine gravel beach.

PAEDERINAE.

22. **Lathrobium* sp. June 6. E.B.I. Sandy shore of bay facing South.

CEPHALININAE.

23. **Nudobius cephalus* Say. June 8. B.I. Under W. Spruce bark.
24. **Philonthus* sp. Aug. 29. Garden Island.
25. *Ontholestes cingulatus* Grav. June 3. B.I. On horse dropping in young birch woods.

OXYPORINAE.

26. **Oxyporus vittatus* Grav. Aug. 20.

TACHYPORINAE.

27. **Tachinus memnonius* Grav. Aug. 15. B.I. Flying around damp part of Ball-field trail. Aug. 26. B.I. In Fungus. Sept. 19. I. 315. On mouse, dead for one day.
28. **Tachinus canadensis* Horn. Aug. 24. B.I. Cow manure in Ball-field.

ALEOCHARINAE.

29. **Baryodma* sp. Aug. 24. B.I. Cow manure in Ball-field.
30. **Atheta* sp. or related genus. Aug. 26. B.I. Telephone trail. Inside stem of *Russula foetens*.
31. **Aleocharinae* genus. Aug. 26. B.I. In fungus. Sept. 18. I. 315. On mouse, dead 3 days.

*Identified by E. A. Chapin, Washington.

HISTERIDAE.

32. *Hister furtivus* Lec. Aug. 24. B.I. Cow manure in Ball-field.

LYCIDAE.

33. *Eros aurora* Hbst. June 4. P.B. Copulating on twig near ground; also surface of L.T. June 6. E.B.I. Open White Pine stand, resting on leaves. June 9. B.I. On hand.

LAMPYRIDAE.

34. *Lucidota corrusca* L. June 4 and 5. Surface of L.T. June 6. E.B.I. Everywhere; some copulating. June 10. E.B.I. trail. Aug. 29. High ridge north of G.L.P.

CANTHARIDAE.

35. *Cantharis nitidulus* Lec. June 9. B.I. In *Crataegus* blossom.
36. *Cantharis scitulus* Say. July 30. Devil's Lake. Aug. 1. B.I. On flowers near Ball-field.

MELYRIDAE.

37. *Collops quadrimaculatus* Fab. Aug. 5. B.I. Open sunny places around Ball-field trail.

38. *Malachius aeneus* L. June 5 and 6. B.I. Around Ranger's Hall.

CLERIDAE.

39. *Thanasimus dubius* Fab. Aug. 20. T.I. Mature Pine slope.

40. *Thanasimus undulatus* Say. July 30. McB. On trunk of Poplar.

OEDMERIDAE.

Identified by W. J. Brown, Entomological Branch, Ottawa.

41. *Ditylus caeruleus* Rand. June 4. Surface of L.T.

MORDELLIDAE.

42. **Mordello marginata* Melsh? Aug. 5. B.I. On flowers in Ball-field.

43. **Anaspis flavipennis* Hald. Aug. 5. B.I. On flowers in Ball-field.

44. *Anaspis rufa* Say. Aug. 1 and 5. B.I. On flowers in Ball-field.

*Identified by H. S. Barber, Washington.

PYTHIDAE.

Identified by W. J. Brown, Ottawa.

45. *Lecontia discicollis* Say. June 5. Surface of L.T.

ANTHICIDAE.

Identified by H. S. Barber, Washington.

46. *Anthicus scrabriceps* Lec. Sept. 1. S.P. On fine gravel beach.

47. *Anthicus cervinus* Laf. Aug. 24. B.I. Attracted to light in laboratory.

ELATERIDAE. PYROPHORINAE.

48. *Monocrepidius auritus* Hbst. June 5. B.I. In Choke Cherry blooms.

49. **Limonium aeger* Lac. June 10. E.B.I. trail.

50. *Ludius virens* Schr. June 4 and 5. Surface of L.T.

51. *Ludius spinosus* Lec. June 10. E.B.I. trail.

52. *Ludius propola* Lec. June 4 and 11. Surface of L.T.

53. *Ludius aercipennis* Kby. June 4. Surface of L.T. July 30. McB. On trunk of W. Pine; D.L.

54. *Ludius cruciatus* L. June 3. B.I. Resting on twig in young birch woods. June 4. P.B. On Poplar twig.

55. *Ludius hieroglyphicus* Say. June 4. Surface of L.T.

56. *Hemicrepidius hemipodus* Say. June 4 and 5. Surface of L.T. June 5 and 9. B.I. Around laboratory. June 6. E.B.I. On log. in open W. Pine stand. June 11. G.L.P. July 30. McB. On trunk of W. Pine.

57. *Hemicrepidius memnonius* Hbst. June 4. Surface of L.T.

58. *Agriotes stabilis* Lec. June 5. Surface of L.T.

59. **Agriotes fucosus* Lec. June 11. Surface of L. T.

60. **Elater pullus* Germ. Aug. 21. B.I. Inside screening of laboratory.

61. **Elater apicatus* Say. June 4. Surface of L.T.

62. **Elater pedalis* Germ. June 4. Surface of L.T. June 11. G.L.P.

CARDIOPHORINAE.

63. **Cardiophorus gagates* Er. June 7. B.I. On stone in gravel pit behind Cemetery Point.

BUPRESTIDAE.

64. *Dicerca prolongata* Lec. July 30. McB. On Aspen; common.
65. *Dicerca chrysea* Melsh. June 4. P.B. On Jack Pine.
66. *Chrysobothris dentipes* Germ. July 26. B.I. On outside of laboratory.
Aug. 1. B.I. Tower Trail.
67. *Buprestis striata* Fab. June 4. Surface of L.T. July 30. McB. On White Pine (1 only).
68. *Buprestis fasciata* Fab. July 31, Aug. 1, 4, and 16. B.I. On outside of buildings, chiefly laboratory.
69. *Buprestis maculativentris* Say. July 30. McB. Common on Aspen, White Pine, and White Spruce. July 22 and 28. Aug. 1, 2, and 5. B. I. On walls and screens of laboratory.
70. *Anthaxia quercata* Fab. June 11. G.L.P.
71. *Chrysobothris trinerzia* Kby. July 22. B.I. Settled on person.

HELODIDAE.

72. *Cyphon variabilis* Thumb. Sept. 14. Portage Peninsula, Black Spruce swamp: inside Pitcher-plant.

DERMESTIDAE. PYTURINAE.

73. *Byturus unicolor* Say. June 5. B.I. In Choke Cherry Blossom.

PERMESTINAE.

74. *Dermestes lardarius* L. June 5. B.I. Around laboratory; and surface of L.T. Sept. 1. B.I. Inside laboratory.
75. *Anthrenus verbasci* L. Aug. 1. B.I. On flowers, near Ball-field.

BYRRHIDAE.

76. *Cytilus alternans* Say. June 4. Surface of L.T.

CUCYJIDAE.

77. *Silvanus surinamensis* L. Aug. 23. B.I. Attracted to light in laboratory 10 p. m.

COLYDIIDAE.

Identified by W. J. Brown, Ottawa.

78. *Lasconotus* sp. ? Aug. 8. B.I. Under White Cedar bark, fairly damp and decaying.

PHALACRIDAE.

Identified by W. S. Fisher, Washington.

79. *Olibrus semistriatus* Lec. Aug. 1 and 5. B.I. On flowers in Ball-field. Aug. 21. I. 340. Sweeping.

COCCINELLIDAE.

80. **Microweisia misella* Lec. Sept. 1. S.P. On fine gravel beach.
81. *Psyllobora vigintimaculata* Say. June 9. B.I. In Crataegus blossom.
82. *Hippodamia tredecimpunctata* L. Aug. 2. Loon Bay.
83. *Coccinella transversoguttata* Fab. Aug. 23. B.I. On Solidago, S.W. end of Ball-field.
84. *Cleis hudsonica* Csy. Aug. 28. B.I. On White Birch in Ball-field.
85. *Anatis quindecimpunctata* Oliv. June 4. Surface of L.T.

*Identified by E. A. Chapin, Washington.

TENEBRIONIDAE. ULOMINAE.

86. *Hypophloeus parallelus* Melsh. Aug. 20. T.I. Under Red Pine bark.

TENEBRIONINAE.

87. *Upis ceramboides* L. June 4. Surface of L.T. Sept. 19. I. 315. Under tar paper on cottage.
 88. *Tenebrio obscurus* Fab. Aug. 4. B.I. In spider-web inside laboratory.
 89. *Tenebrio molitor* L. July 25 and 28. B.I. Inside and outside laboratory.
 90. *Boros unicolor* Say. June 4. P.B. In moss and low plants on bare spots; also surface of L.T. June 5. B.I. Around laboratory.

*Identified by E. A. Chapin.

SCARABAEIDAE. APHODIINAE.

91. *Aphodius fossor* L. Aug. 24. B.I. Cow manure in Ball-field.
 92. *Aphodius fimetarius* L. Aug. 24. B.I. Cow manure in Ball-field.

MELOLONTHINAE.

93. **Phyllophaga anxia* Lec. June 9. B.I. Inside Lakeview House.
 94. **Phyllophaga drakei* Kly. June 5. Surface of L.T.
 95. *Dichelonyx subvittata* Lec. June 7. B.I. Attracted to light in laboratory 9 p. m.

CETONIINAE.

96. *Osmoderma scabra* Beauv. July 24. W.L. Under Blueberry bushes.
 97. *Trichiotinus assimilis* Kby. July 22 and 26. B.I. On blooms, chiefly Spiraea and Chrysanthemum.

*Determined by E. A. Chapin, Washington.

LUCANIDAE.

98. *Platycerus quercus* Web. June 4. Surface of L.T.

CERAMBYCIDAE.

Identified by W. J. Brown, Division of Systematic Entomology, Entomological Branch, Department of Agriculture, Ottawa, Ont.

99. *Asemum maestum* Hald. June 5 and 6, July 22. B.I. On wood painted white. Also on surface of Lake T. (June 5).
 100. *Asemum atrum* Esch. June 5. B.I. Swarming on wood painted white.
 101. *Criocephalus agrestis* Kby. Aug. 29. B.I. Inside laboratory.
 102. *Pseudopachyta rugipennis* Newm. June 4. P.B. On dead standing Jack Pine.
 103. *Evodinus monticola* Rand. June 6. E.B.I. On Elder.
 104. *Acmaeops pratensis* Laich. June 6. E.B.I. On Elder.
 105. *Acmaeops protus* Kby. June 4 and 5. Surface of Lake T. July 30. MacB. On W. Pine and Aspen. Aug. 4. B.I. Inside laboratory.
 106. *Anthophilax attenuatus* Hald. June 4. Surface of Lake T.
 107. *Anoploclera chrysocoma* Kby. July 22. B.I. On Spiraea blooms.
 108. *Typocerus sparsus* Lec. July 22. B.I.
 109. *Xylotrechus undulatus* Say. Aug. 1, 3 and 7. B.I. On outside of laboratory.
 110. *Xylotrechus annosus* Say. Aug. 5, 7, 15, 16, 23-27, 31. B.I. Outside and inside of laboratory, esp. hot copper fly-screens.

111. *Monochamus notatus* Dru. Aug. 2. B.I. On outside of laboratory.
112. *Monochamus scutellatus* Say. July 30. MacB. on W. Pine. Aug. 12 and 26. B.I. Inside and outside of laboratory.
113. *Graphisurus obsoletus* Oliv. July 30. MacB. On W. Pine.
114. *Oberea* sp. July 25. W.L.

CHRYSOMELIDAE. DONACIINAE.

115. *Donacia palmata* Oliv. July 25. F.R.B. Aug. 2. L.B.
116. *Donacia cincticornis* Newm. Aug. 2. L.B.
117. *Donacia proxima* Kby. July 25. F.R.B. Aug. 2. L.B.
118. *Donacia hirticollis* Kby. July 25. F.R.B.
119. **Donacia* sp. Aug. 2. L.B.

ORSODACNINAE.

120. *Orsodacne atra* var. *childreni* Kby. June 5. B.I. In Choke Cherry blooms.
June 9. B.I. In *Crataegus* blooms.

EUMOLPINAE.

121. *Nodonota tristis* Oliv. Sept. 1. S.P. Black Spruce swamp. On grass in seed.
122. **Xanthonia villosula* Melsh.? Aug. 28. B.I. On White Birch in Ball-field.
123. *Adoxus obscurus* var. *villosulus* Schrank. June 4. Surface of L.T. Aug. 5 and 15. B.I. On flowers and grasses in Ball-field.

CHRYSOMELINAE.

124. *Leptinotarsa decemlineata* Say. Aug. 21. B.I. On potato plants.

GALERUCINAE.

125. **Galerucella nymphaeae* L.? var. Aug. 2. L.B. On *Nymphaea*.
126. **Galerucella* sp. (resembles *vaccinii* Fall.) Aug. 21. I. 340. Sweeping. Sept. 1. S.P. Black Spruce swamp. Sweeping *Vaccinium*.

HALTICINAE.

127. *Haltica bimarginata* Say. June 7. B.I. On Alder; numerous specimens.
128. *Epitrix cucumeris* Harr. Aug. 23. B.I. On *Solidago* at S.W. end of Ball-field.
129. *Systema frontalis* Fab. Sept. 1. S.P. 'Black Spruce Swamp. Sweeping *Carex* and *Chamaedaphne*.

*Identified by H. S. Barber, Washington.

CURCULIONIDAE. RHYNCHITINAE.

130. **Auletes albovestita* Blatch. Sept. 1. S.P. Sweeping *Carex* and *Chamaedaphne*; numerous.

GTIORHYNCHINAE.

131. *Brachyrhinus ovatus* L. Aug. 3. B.I. Inside laboratory.

CURCULIONINAE.

132. *Sitona hispidulus* Fab. June 3. B.I. On grass in open pasture. Sept. 1. S.P. B. Spruce swamp. On grass in seed.
133. **Pissodes strobi* Peck. July 30. Devil's Lake.
134. *Pissodes affinis* Rand. June 5 and 10. B.I. Swarming on laboratory.
135. *Hylobius pales* Boh. June 4 and 5. B.I. Swarming on laboratory.

136. *Balaninus nasicus* Say. June 5. B.I. Numerous in Choke Cherry Blooms. July 25. B.I. Inside laboratory.
137. **Pseudanthonomus* sp. Aug. 24. B.I. Tower trail. On Red Cherry leaves.
138. **Acoptes suturalis* Lec. Aug. 1. B.I. On flowers, near Ball-field.
139. **Carphonotus testaceus* Csy. Aug. 8. B.I. Under W. Spruce bark.
- *Identified by L. L. Buchanan, Washington.

SCOLYTIDAE.

Identified by Dr. J. M. Swaine, Entomological Branch, Department of Agriculture, Ottawa, Ont.

140. *Polygraphus rufipennis* Kby. Aug. 8. B.I. Under White Spruce bark.
141. *Dendroctonus valens* Lec. June 6. B.I. Swarming on wood painted white. Hot thundery day.
142. *Phloeosinus canadensis* Sw. June 4.
143. *Hylurgops pinifex* Fitch. June 5. As for *Dendroctonus valens*. Sunny day.
144. *Ips chagnoni* Sw. Aug. 20. T.I. Under bark of dying Red Pine.
145. *Pityokteines sparsus* Lec. Aug. 8. B.I. Under Balsam bark.
146. *Orthotomicus coelatus* Eich. Aug. 5. B.I. Under White Spruce bark.
147. *Dryocoetes affaber* Mann. June 8 and Aug. 8. B.I. Under White Spruce bark.

(To be Continued.)

LYGUS LUCORUM MEYER RE-DISCOVERED IN NORTH AMERICA (HEMIPTERA, MIRIDAE).*

BY H. G. JOHNSTON,
College Station, Texas.

Lygus lucorum Meyer was first recorded from the Nearctic Region by Dr. P. R. Uhler (1886) in his "Check-List of the Hemiptera Heteroptera of North America." Dr. Knight (Ent. News, XLI, 47, 1930) has shown that Dr. H. T. Fernald collected one specimen of *Lygus lucorum* Meyer at Orono, Maine, August 25, 1885. This specimen was determined by Uhler, apparently at about the same time as *Lygus spinolae* Meyer, another European species closely related to *Lygus lucorum* Meyer. However, Uhler records *Lygus lucorum* Meyer in his Check-List (1886) and does not mention *Lygus spinolae* Meyer. Dr. Fernald's specimen is the only known specimen of *Lygus lucorum* from North America to the present time.

Recently I have received from Professor Joseph Ouellet, Montreal, Quebec, two female specimens of *Lygus lucorum* Meyer taken at Lauzon, Quebec, July 12, 1919, and August 12, 1927, (J. Ouellet). Upon request Professor Ouellet sent the following specimens for study: 2 males and 6 females August 12, 1927, Lauzon, Quebec, (J. Ouellet). In regard to these specimens, Professor Ouellet wrote: "Lauzon is a locality on the south shore of the St.

*Contribution from the Entomology Department, Texas A. & M. College, College Station, Texas.

Lawrence River, about three miles below Quebec, and two miles lower than the city of Levis. It is right along the shore and is a hilly place with lots of damp, marshy spots which seem favorable for bug collecting."

To facilitate the recognition of this species the following redescription is given:

The genital claspers place this species in Group II, (*campestris* group) (Knight, Cornell University Expt. Sta. Bull. 391, 561, 1917). It is closely related to *pabulinus* Linn., but is readily distinguished by the distinct carina across base of vertex, more robust form, and the distinctive genital claspers.

Male. Length 5.2 mm., width 2.35 mm. Head: width across eyes 1.09 mm., vertex .39 mm., basal carina distinct, greenish-yellow, shining, eyes gray to black. Rostrum, length 1.76 mm., reaching to apex of posterior coxae, yellowish brown, apex black. Antennae: segment I, length .58 mm.; II, 1.68 mm.; III, .96 mm.; IV, .67 mm.; greenish-yellow to brown, gradually darker toward apex. Pronotum: length 1.01 mm., width at base 1.85 mm.

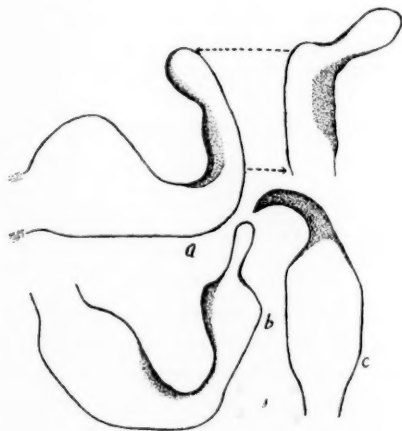


Fig. 1. *Lygus lucorum*, male genital claspers. a, left clasper, lateral aspect; b, left clasper, dorsal aspect; c, right clasper, external lateral aspect.

Dorsum uniformly yellowish green to dark green, densely clothed with rather coarse, sub-erect, pale pubescence. Membrane dark brown, the brown color narrowly invading the inner apical angles of the corium, veins yellowish green.

Legs yellowish green, hind femora with two faint brown bands near apex, the apices of tibiae and tarsi brown, tibial spines dark brown to black. Ventral surface uniformly yellowish green; genital claspers (fig. 1) characteristic of the species.

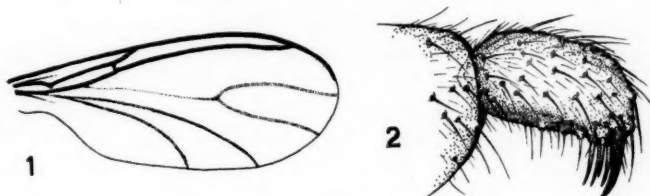
Female. Length 5.2 mm., width 2.4 mm. Slightly more robust than the male but not differing in coloration.

A NEW SPECIES OF SCIARA (DIPTERA)

BY F. R. SHAW,

Cornell University, Ithaca, N.Y.

In a culture of flies sent to Dr. O. A. Johannsen by Dr. C. W. Metz of Johns Hopkins, there proves to be a new species of *Sciara*. This insect is being used in research in genetics and it was thought best to have the insect described as soon as possible. According to Doctor Metz, "The original female under No. 6986, was collected by Mr. J. P. Reynolds from Sykes' greenhouse at Guilford, North Carolina, December 5, 1933."

*Sciara radialis* n. sp.

Head and thorax black, abdomen dusky covered with pale setulae. In the male the ratio of the length of the antennae to the length of the wing is as 3:7, in the female as 3:8. Palpi, petioles of halteres, coxae, trochanters and femora pale yellow, tibia and tarsi darker. The ratio of the prothoracic basitarsus to its tibia is in the male as 2:5, in the female as 3:8. Wing (fig. 1) longer than body in male, subequal to or shorter than the body in the female. The ratio of the length of R_1 to R_s in the males is as 4:9, in the females as 1:2. The ratio of the length of the petiole of M to vein M_3 is as 13:17 in the male and as 17:18 in the female. The costa extends more than .7 the distance from R_s to M_{1+2} . Length of male $1\frac{1}{2}$ mm.; of female 2 mm. Hypopygium (fig. 2) with one strong spine and four or five smaller spines at the tip of the clasper. In Pettey's key (Annals of the Entomological Society of America 11:319) this species would key out with Johannsen's undescribed species No. 37 but differs in respect to the details of the hypopygium and of the wing venation.

Type in Cornell University collection. Paratypes in my collection.

A CHOICE OF WORDS.

BY H. C. FALL,
Tyngsboro, Mass.

In recently glancing over a verbatim quotation of Col. Casey's description of *Leptura haldemanni* in Swaine and Hopping's *Lepturini* paper, my eye was arrested by the word "punctuation." Those who are familiar with Casey's writings know that he never used this word, but always the more customary "punctuation." Without dwelling on the questionable propriety of making such substitution in a direct quotation, it is presumed that the change was deliberately made under the same misconception that prompted Mr. Hopping's article in the March, 1931, issue of the Canadian Entomologist, entitled "Two Very Common Mistakes of Entomological Writers." In this article the author unquali-

fiedly declares that the use of "punctuation" is incorrect and that the proper words are "punctation" or "puncturation." There can be no doubt that these latter words are perfectly good and proper terms, and were we to begin again from "scratch" I think I should prefer them; however they are not one whit more correct than "punctuation," which moreover enjoys the prestige of virtually universal usage among coleopterists of both high and low degree, ever since technical descriptions in English have supplanted the old Latin diagnoses.

Is it not a sufficient guarantee of the validity of the word "punctuation" to say that it has a perfectly legitimate descent, being derived from the old verb "punctuate," which is defined in the Oxford dictionary—"To mark with points or dots, especially with small depressions resembling punctures": that it has been in common use for a hundred years more or less among the highest authorities of the science: and that it is recognized and defined in its zoological sense by such authorities as the Century, Standard and Oxford dictionaries.

Furthermore Mr. Hopping is again wrong in citing Doctors Le Conte and Horn as exceptions to the general run of offenders. Both Le Conte and Horn used the term "punctuation" when occasion called for it, while neither of them ever used "punctation" or "puncturation."

As I sit at my desk there are within reach of my hand works of the following classic and standard entomologists:—Say, Harris, Packard, Comstock, Scudder, LeConte, Horn, Kirby, Sharp, Champion and many others. All of them I find used the word "punctuation." Would it not be strange if in so doing they were all in error?

ANNUAL MEETING ENTOMOLOGICAL SOCIETY OF ONTARIO.

The Seventy-first Annual Meeting of the Entomological Society of Ontario will be held at the Ontario Agricultural College, Guelph, on Thursday and Friday, November 22nd and 23rd, 1934.

If the programme is sufficiently full to warrant it, the meeting will be continued on Saturday, November 24th.

A special feature of the meetings will be a symposium on "The Influence of Cultural Practices on Insects."

Please make a special effort to be present and aid in keeping up the interest and high standard of our meetings by presenting a paper and taking part in the discussions.

Titles of papers should be in the hands of the Secretary by November 1st. Please advise of *time* required for reading and whether lantern is needed.

W. A. Ross, *President*,
Vineland Station, Ont.

R. H. OZBURN, *Secretary*,
O.A.C. College, Guelph.

Mailed Saturday, November 3rd, 1934.

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